(12) UK Patent Application (19) GB (11) 2 143 138 A

(43) Application published 6 Feb 1985

(21) Application No 8417754

(22) Date of filing 12 Jul 1984

(30) Priority data

(31) 340/83 (32) 13 Jul 1983 (33) IE

(71) Applicant
Leonard Barry Hilton,
5 Hillcrest Estate, Carrigaline, County Cork, Republic of Ireland

(72) Inventor
Leonard Barry Hilton

(74) Agent and/or address for service
A. R. Davies & Co., 27 Imperial Square, Cheltenham, Glos.

(51) INT CL³
A61G 1/00 B62B 13/18

(52) Domestic classification
A5X 20
B7B 396 TC

(56) Documents cited

GB 1541134	GB 0579493
GB 1473862	GB 0549684
GB 1430597	US 4291891
GB 0943037	US 3912290
GB 0773350	US 3851891

(58) Field of search
A5X
B7B

(54) Apparatus for transporting patients

(57) An apparatus for transporting immobile patients comprises an open top oblong receptacle 1 for receiving a patient, a pair of skids 12 extending longitudinally of the receptacle on the exterior surface of the base thereof, and a handle 8 at least at one end 5 of the receptacle to permit a person to raise the end 5 off the ground and push or pull the receptacle with the opposite end 4 on the ground. A pair of wheels 11 are provided at the opposite end 4 of the receptacle which are movable from a ground-engaging position on the underside of the receptacle to a raised position remote from the ground which permits the skids 12 to engage the ground along substantially their full length.

FIG.1.

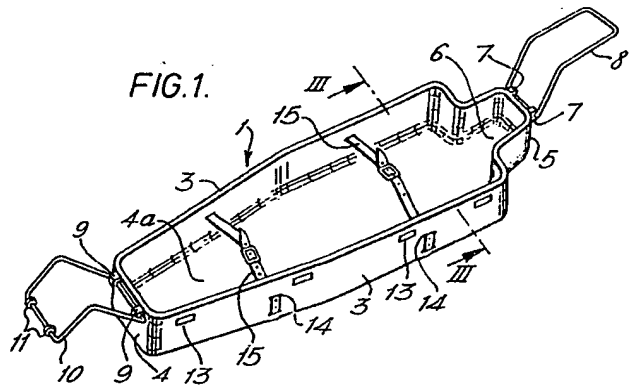
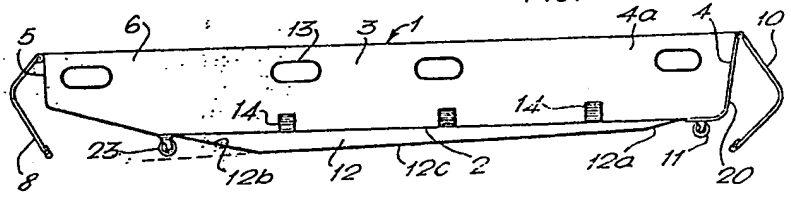


FIG.4.



GB 2 143 138 A

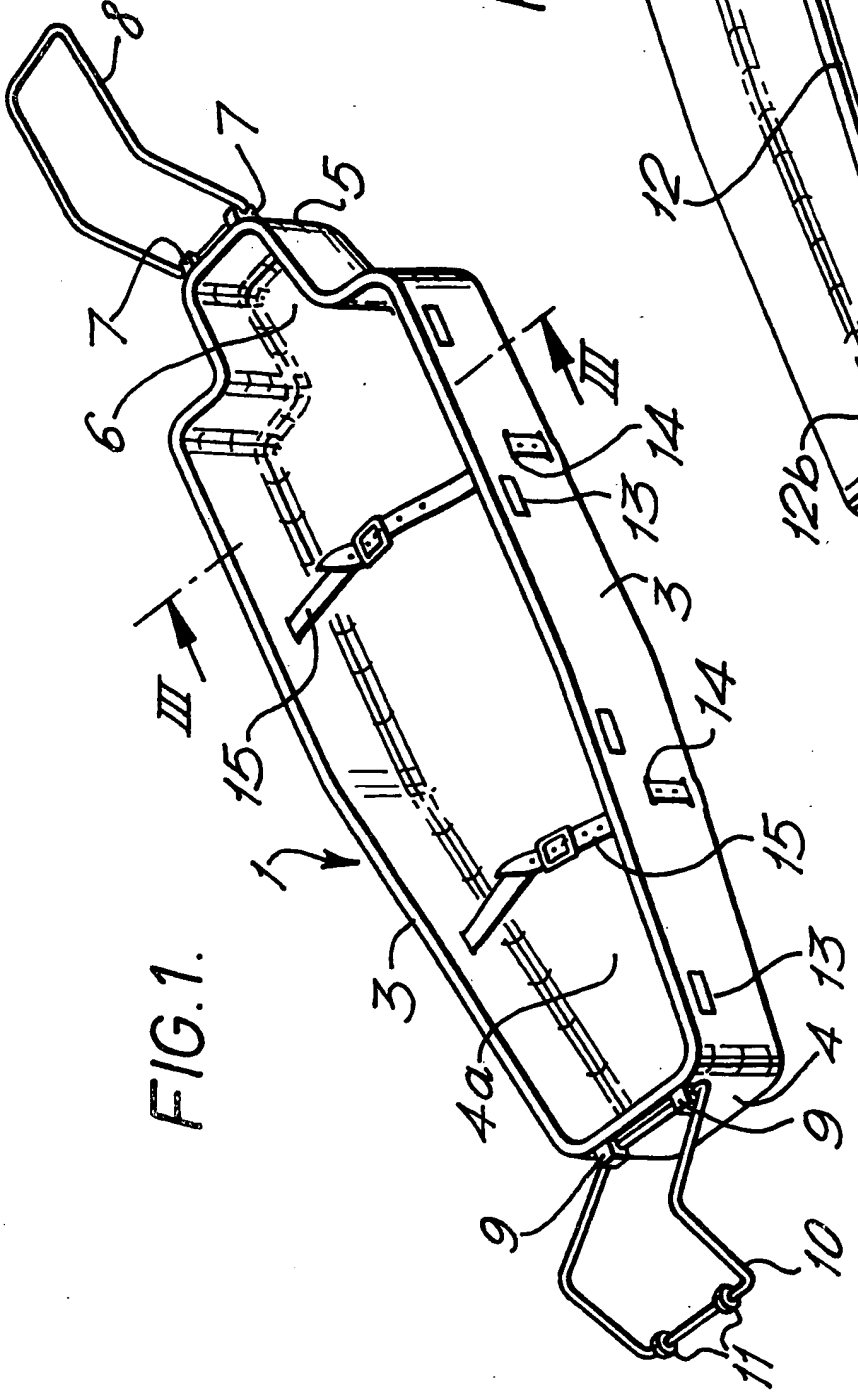

8
7
7
5
6
III
III
14
13
3
15
14
15
1
3
13
4a
4
9
9
10
11

FIG. 1.

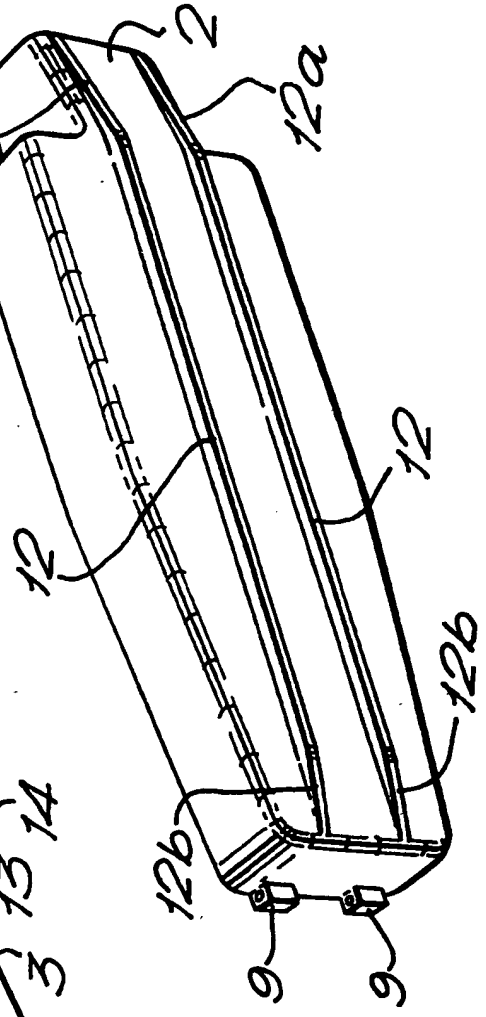

2
12a
12a
12
12
12b
12b
9
9

FIG. 2.

FIG. 3.

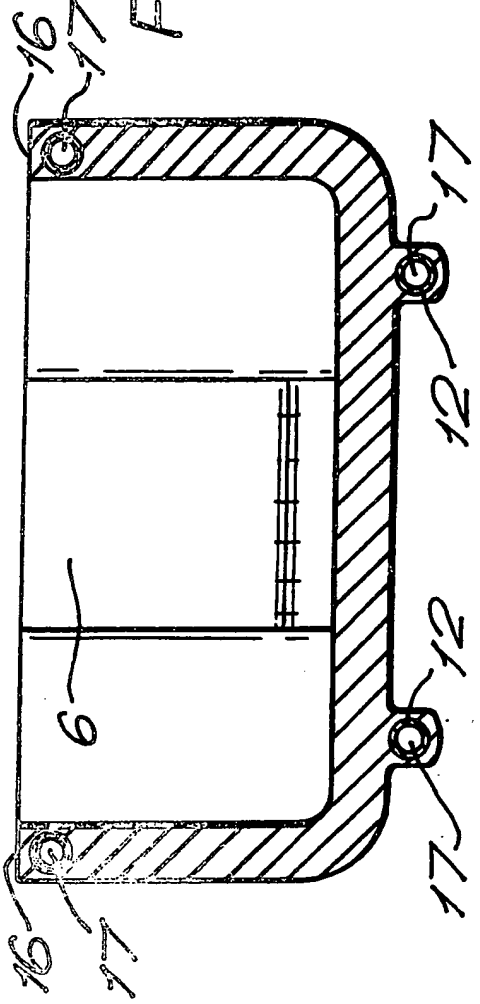
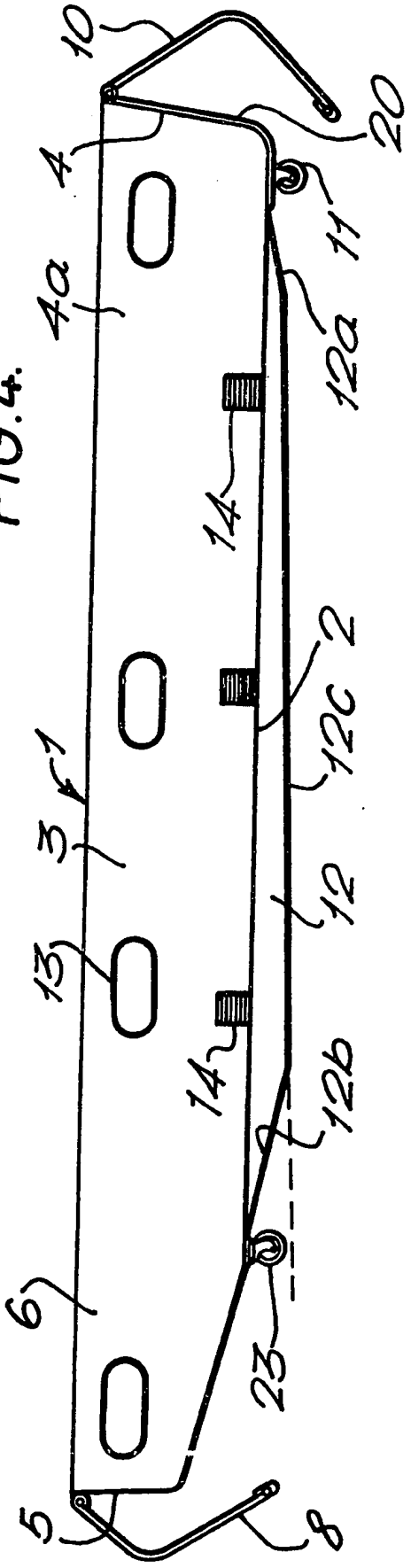

16
17
17
12
12
6
17
16
17

FIG. 4.


10
20
4
11
4a
12a
14
2
12c
1
3
12
13
14
12b
6
23
5
8

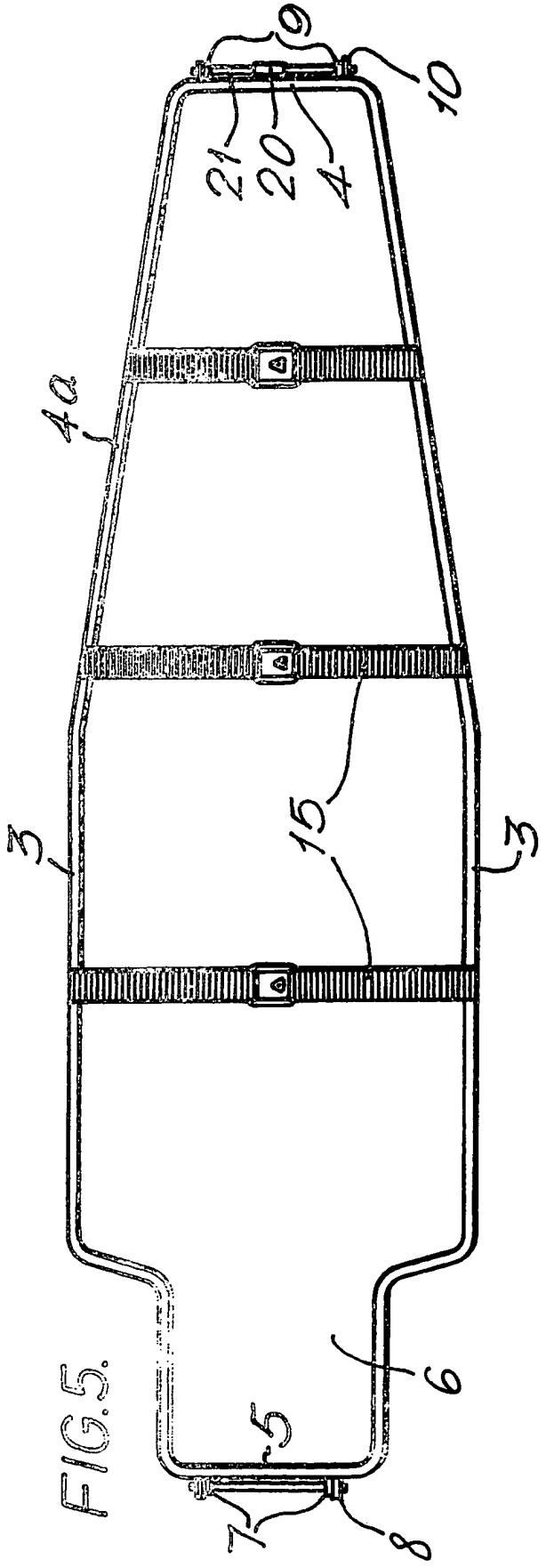


FIG.5.

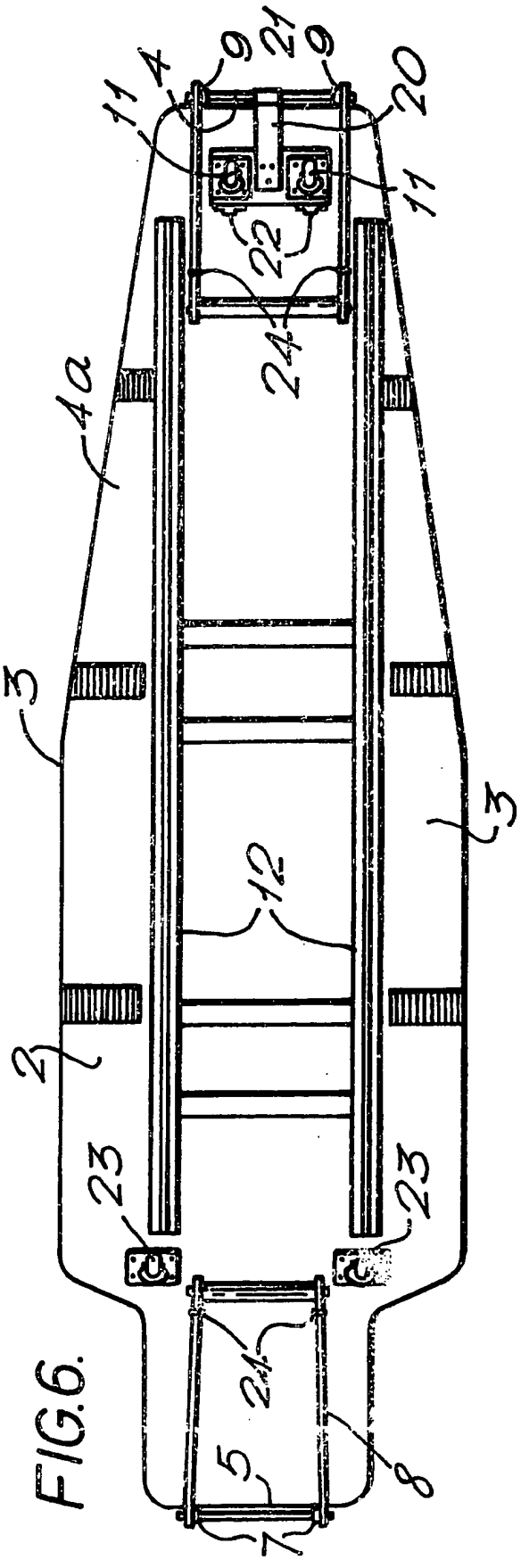


FIG.6.

SPECIFICATION

Apparatus for Transporting Patients

This invention relates to apparatus for transporting patients and, in particular, to apparatus for evacuating immobile patients from hospitals in emergencies.

There is a problem in all hospitals of evacuating immobile patients in emergencies, for example if a fire should break out in the hospital. This problem is enhanced because lifts are not normally used in emergencies and therefore stairs have to be negotiated.

Immobile patients are normally moved around in hospitals using a variety of equipment such as — wheel-chairs, stretchers, and trolley beds.

In general however there are not usually sufficient numbers of these devices available for evacuating large numbers of patients.

A major disadvantage of using wheel-chairs, stretchers or trolley beds for moving patients is that when negotiating stairs, there is a grave danger that the patient may fall off the device. A second disadvantage is that at least two and sometimes up to four persons are required to negotiate one of the above devices up or down a staircase. This means particularly at night time when hospital staff are at a minimum that immobile patients may have to wait a long period before they are evacuated from a hospital.

In practice fire drills in some hospitals patients are lifted from their beds and placed on a blanket and then pulled along the floor. When stairs have to be negotiated usually two persons are required to carry the patient on the blanket down the stairs. The procedure described above exposes the patient to a high risk of aggravation of present injuries or illnesses and to the risk of further injuries being incurred.

There is therefore a need for apparatus for use in safely evacuating immobile patients from a hospital in an emergency.

The present invention seeks to provide apparatus for transporting patients in various situations said apparatus being such that it will protect the patients during transit and that it can be moved easily along the floor and is capable of being lowered down a stairway by one person.

According to the invention there is provided an apparatus for transporting immobile patients, comprising an open top oblong receptacle for receiving a patient, skid means extending longitudinally of the receptacle on the exterior surface of the base thereof, and a gripping means at least at one end of the receptacle to permit a person to push or pull the receptacle along the ground.

Preferably, at least two skids are provided respectively on opposite sides of the longitudinal axis of the receptacle, and wherein a pair of wheels are provided at the said opposite end of the receptacle to the gripping means, the apparatus being movable either with the wheels engaging the ground and the skids raised from the ground or with the skids engaging the ground and the wheels raised from the ground.

Most preferably, the wheels are movable relative to the receptacle from a ground-engaging position on the underside of the receptacle to a raised position remote from the ground which permits the skids to engage the ground along substantially their full length.

The receptacle and skids are preferably integrally formed, from plastics material by an injection moulding process or alternatively by using glass fibre reinforced polyesters.

To strengthen the receptacle the skids and the rim are preferably formed having an internal tubular metal element.

In order that the invention may be understood more easily embodiments thereof will now be described by way of example only with reference to the accompanying drawings, in which:

Fig. 1 is a perspective view of the apparatus according to the invention;

Fig. 2 is a perspective view of the underside of the apparatus of Fig. 1, with the handles removed;

Fig. 3 is a cross-sectional view along the line III—III of the apparatus of Fig. 1;

Fig. 4 is a side view of a second embodiment of the invention;

Fig. 5 is a top view of the embodiment of Fig. 4; and

Fig. 6 is a bottom view of the embodiment of Fig. 4.

Referring now to the drawings and in particular to Figs. 1 and 2, the apparatus shown therein comprises a rigid open top receptacle generally indicated at 1 having a base 2, opposite sides 3 and bottom and top ends 4 and 5 respectively. The sides 3 of the receptacle define between them a shape conforming to the shape of the human body. The receptacle 1 has a main body portion and a narrow head receiving portion 6 in which the base 2 is slightly upwardly inclined relative to the main body portion to receive a patient's head. The sides 3 of the receptacle 1 converge for one third of their length towards the bottom end 4, defining a tapered portion 4*a* for the legs and feet of a patient. The end 5 has a pair of brackets 7 integrally formed on its outer surface to which is fixed a U-shaped handle 8 for lifting the receptacle 1. The end 4 similarly has a pair of brackets 9 integrally formed on its outer surface to which is pivotally mounted a further U-shaped handle 10, in this case having a pair of wheels 11. On the exterior surface of the base 2 are integrally formed a pair of skids 12 symmetrically disposed relative to the longitudinal axis of the receptacle 1 and extending substantially along the full length thereof. Each of the skids has a sloping leading and trailing edge 12*a* and 12*b* respectively for allowing the receptacle to be easily lowered or raised down or up a stairway. The handle 10 may be pivotted to a position underneath the receptacle 1 and there held in engagement with the skids 12 in a conventional manner with clips (not shown) so that the wheels 11 can engage

with the ground. The sides 3 of the receptacle 1 have four handholds 13 which can be used if a number of people are available to give assistance in carrying the receptacle 1. A pair of slots 14 in each side 3 of the receptacle 1 enables conventional safety straps 15 to be fixed to the receptacle 1 to secure a patient during transit.

A waterproof cover may be used and clipped into the handholds 13 in conventional manner should a patient be moved in the open during rain.

Referring now to Fig. 3 there is shown therein a cross-section along the line III—III of the apparatus Fig. 1.

The cross-section shows that the receptacle 1 has a tubular steel element 17 integrally formed in the rim 16 and in the skids 12. The tubular steel element 17 will increase the rigidity and strength of the receptacle rim 16 and skids 12.

In use, a number of receptacles 1 would be stored in a hospital or other similar establishment near to the patients. For example one could be placed under each bed or a number of the receptacles would be stacked together in a room. The handles 8 and 10 may be pivotted so that they lie snugly against the underside of the receptacle and a number of receptacles may then be stacked together in nesting relationship. In the event of an emergency evacuation from a hospital a receptacle would be placed beside a patient's bed with the handle 10 pivotted underneath the receptacle and engaged with the skids 12 by the clips (not shown) so that the wheels 11 on the handle 10 engage with the ground. Two persons can then lift the patient from the bed by one taking hold of the top and the other the bottom of the patient's undersheet. The patient can then be quickly placed in the receptacle 1, and if time permits a number of blankets placed on top to keep him/her warm. The interior of the receptacle 1 may have a layer of padding to provide additional comfort for the patient. The safety straps 15 can then be used to secure the patient in the receptacle after which the end 5 of the receptacle 1 may be raised with the handle 8 and the receptacle pushed or pulled along, to evacuate the patient from the hospital.

If a stairway has to be negotiated then the receptacle would be placed at the edge of the stairs and the handle 10 with the wheels 11 would be disengaged from the skids 12 so that one person holding the handle 8 the receptacle can be easily slid down the stairs, on the skids 12.

Figs. 4 to 6 show a second embodiment of the invention, and in those figures the same reference numerals have been used for parts which are the same or similar to parts of the first embodiment.

The significant differences between this and the preceding embodiment are as follows:

1. The wheels 11 opposite the head end 6, which are in the form of casters, are mounted for pivotting independently of the handle 10. Thus the wheels 11 are mounted on a lever 20 which pivots about a cross bar 21 between the brackets 9. The wheels 11 are retained in position underneath the bottom end 4 of the receptacle, as shown, by the aid of magnetic clips 22, but may be pivotted upwardly to lie over the bottom end 4 of the receptacle 1.

2. A further pair of fixed wheels (casters) 23 are provided at the front or head end 6 of the receptacle.

3. Between the portions 12*a* and 12*b* the bottom 12*c* of each skid 12 is inclined upwardly from front to rear at such an angle that the notional projection of the bottom 12*c* towards the front (indicated by the broken line in Fig. 4) passes beneath the fixed wheels 23. The skids do not have tubular steel elements 17.

These differences provide the following characteristics to the apparatus. When the wheels 11 are in position as shown beneath the receptacle 1 both pairs of wheels 11 and 23 engage the ground with the skids 12 raised free of the ground. In this position the receptacle may be pushed or pulled from either end by the respective handle 8 or 10 and is ideal for use on smooth floors, although either end can be lifted free of the floor if desired to clear minor obstacles.

However, when the pair of wheels 11 are raised above the end 4 of the receptacle, the portions 12*c* of the skids come into contact with the ground and the wheels 23 are raised out of contact with the ground. In this position the receptacle may be slid down a flight of stairs, and the position of the wheels 23 relative to the angled skids ensures that these do not obstruct such movement by catching on the stairs.

As in the case of the previous embodiment, the handles 8 and 10 may be pivotted to lie snugly against the underside of the receptacle 1, see Fig. 6, and there secured by clips 24 to permit stacking of the containers in nested relationship. The lever 20 likewise fits snugly against the receptacle when in the operative position, again to permit such stacking.

It is envisaged that reinforcement of the shoulder and neck area of the receptacle may be advantageous. This reinforcement of the shoulder and neck area is readily achieved by providing $\frac{1}{2}'' \times \frac{1}{8}''$ metal strip body inserts suitably contoured to lie snugly against the bottom and interior side walls of the receptacle.

It should be appreciated that the invention could be used in many other applications other than evacuating patients from hospitals. For example, the invention could be used by mountain rescue teams for taking injured or ill climbers off mountains. In another application the invention could be used for removing injured people from disaster zones for example the scene of bomb explosions, land slides or earthquakes.

It will be also appreciated that many patients when being transported must have some medical apparatus attached to them and the invention can be readily adapted and modified to carry such apparatus.

CLAIMS

1. An apparatus for transporting immobile patients, comprising an open top oblong

receptacle for receiving a patient, skid means extending longitudinally of the receptacle on the exterior surface of the base thereof, and a gripping means at least at one end of the receptacle to permit a person to push or pull the receptacle along the ground.

2. An apparatus according to claim 1, wherein at least two skids are provided respectively on opposite sides of the longitudinal axis of the receptacle, and wherein a pair of wheels are provided at the said opposite end of the receptacle to the gripping means, the apparatus being movable either with the wheels engaging the ground and the skids raised from the ground or with the skids engaging the ground and the wheels raised from the ground.

3. An apparatus according to claim 2, wherein the wheels are movable relative to the receptacle from a ground-engaging position on the underside of the receptacle to a raised position remote from the ground which permits the skids to engage the ground along substantially their full length.

4. An apparatus according to claim 3, wherein a further pair of wheels are provided on the underside of the receptacle at the said one end thereof, and wherein the skids are angled such that when the first mentioned wheels are in the position on the underside of the receptacle both pairs of wheels contact the ground with the skids raised free of the ground, whereas when the first mentioned wheels are in the raised position the skids contact the ground with the further wheels out of contact with the ground.

5. An apparatus according to any preceding claim, wherein the receptacle has a shape generally conforming to that of the human body, having a main body portion and a head receiving portion narrower than the main body portion.

6. An apparatus according to claim 5, wherein in the head receiving portion the base of the receptacle is slightly upwardly inclined.

7. An apparatus according to claim 5 or 6, wherein the head receiving portion is at the said one end of the receptacle, that is, at the same end as the gripping means.

8. An apparatus according to any preceding claim, including a further gripping means at the opposite end of the receptacle to the said one end.

9. An apparatus according to any preceding claim, wherein the receptacles are nestable one within the other for stacking, the or each gripping means including a handle pivotted to the respective end of the receptacle and so shaped as to be foldable snugly against the underside of the receptacle to permit the receptacles to be so stacked.

10. An apparatus according to any preceding claim, further including a plurality of straps to hold a patient in the receptacle.

11. An apparatus according to claim 1, substantially as described herein with reference to Figs. 1 to 3 or to Figs. 4 to 6 of the accompanying drawings.

Printed in the United Kingdom for Her Majesty's Stationery Office, Demand No. 8818935, 2/1985. Contractor's Code No. 6378.
Published by the Patent Office, 25 Southampton Buildings, London, WC2A 1AY, from which copies may be obtained.